

ABSTRACT

A method for growing single-wall carbon nanotubes involves preparing a catalyst comprising catalytic metals, iron and molybdenum, and magnesium oxide support material and contacting the catalyst with a gaseous carbon-containing feedstock at a sufficient temperature and for a sufficient contact time to make single-wall carbon nanotubes. The weight ratio of iron and molybdenum can range from about 2 to 1 to about 10 to 1 and the metals loading up to about 10 wt% of the MgO. The catalyst can be sulfided. Methane is a suitable carbon-containing feedstock. The process can be conducted in batch, continuous or semi-continuous modes, in reactors, such as a transport reactor, fluidized bed reactor, moving bed reactors and combinations thereof. The process also includes making single-wall carbon nanotubes with catalysts comprising at least one Group VIB or Group VIIIB metal on supports such as magnesia, zirconia, silica, and alumina, where the catalyst is sulfided.